STORMWATER POLLUTION PREVENTION PLAN
NARRATIVE REPORT
AND
STORMWATER MANAGEMENT CALCULATIONS

Garvies Point Waterfront Redevelopment
Phase I

City of Glen Cove
Nassau County, New York

Prepared for:

RXR-GLEN ISLE PARTNERS LLC

Prepared by:

PS&S
integrating design & engineering

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Professional Engineer
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September 27, 2012

Revised May 23, 2014

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

This report has been prepared to present design objectives, methodology and calculations for the management of stormwater runoff under post-development conditions for **Garvies Point Waterfront Revitalization Project – Phase 1**, a proposed residential/commercial redevelopment project located in the City of Glen Cove, Nassau County, New York, as shown on the USGS Map located in Appendix A.

The project site is located along the shores of Hempstead Harbor and Glen Cove Creek in the City of Glen Cove, Nassau County. The proposed project will be constructed in conjunction with the City's roadway improvement project known as Garvies Point Road and Herb Hill Road Improvements. Phase I of the project will include two multi-level residential buildings (Blocks H and I), one parking lot and a community recreation park. Also included in the Phase I project are the relocation of the Anglers Club and a new Marina Support Building and portion of the new waterfront walkway / Espanade.

Phase I of the project (27.5 acres) is situated on the eastern portion of a 52.24 acre parcel, bordered to the south by Glen Cove Creek, to the north by The Place, and to west by and including Dickson Street.

2.0 EXISTING SITE CONDITIONS

The proposed project is located within a former industrial area adjacent to Glen Cove Creek and Hempstead Harbor. Portions of the former industrial site have been demolished and environmental remediation is complete or underway. Several existing buildings remain within the Phase I project site and are slated to be demolished as part of the Phase I project.

The proposed project improvements will disturb approximately 18.4 acres of the 27.7 acre Phase I tract, as indicated on the Proposed Drainage Area Map (see Appendix B). The northern portion of the site is moderately steep sloping from a high elevation of approximately 62 feet (NAVD 1988) along the northern part of the property, to the lower elevations of approximately 15 feet at the proposed roundabout. The southern portion of the tract is relatively flat with elevations varying from 8.0 to 15. Portions of the existing site include several poorly maintained depressions which currently collect stormwater

runoff. These depressions are located in areas of the former building pads. The existing vegetation on the site is in poor or fair condition.

Currently, there are no stormwater management facilities on the site. Stormwater runoff is collected in the depressions as described above or directly discharged to Glen Cove Creek.

Soils within the project's area of study are a mix of MfD, SbD, Uf, Ug and UnB soils as designated in the "Soil Survey Geographic (SSURGO) database for Nassau County, New York", USDA Natural Resources Conservation Service, Survey Area Version 5, dated 12/19/2011. The soil group designations and their percentages within the area of study are as identified in table 2-1 and are based on an overall watershed area of 29.7 acres. Refer to the Pre-Development Drainage Area Plan in Appendix B for watershed area delineation.

Table 2-1 Soils

Symbol	Name and Descriptions	Area (ac.)	% of total	Hydrologic group
MfD	MfD - Montauk fine sandy loam, 15 to 25 percent slopes	0.3	1.1	C
SdB	MfD - Montauk fine sandy loam, 15 to 25 percent slopes	5.5	19.9	B
Uf	Udorthents, Refuse substratum	3.9	14.1	*
Ug	Urban Land	11.5	41.5	*
UnB	Urban Land – Montauk Complex, 3 to 8 percent slopes.	6.5	23.4	*
Total Area		27.7	100	

Hydrological Soil Groups for "Uf", "Ug" and "Unb" have not been specified in the soil survey and HSG "B" has been assumed based on the soil descriptions and surrounding soil types. Actual HSG and conductivities will be determined based upon field geotechnical investigation.

Time of concentration (Tc) of 5 minutes for watersheds has been utilized as specified in the letter of County of Nassau, Department of Public Works, dated November 26, 2007 (copy included in Appendix D).

Southern portions of the site are located in the 100 Year Flood Area Zone AE (Elevation 11.0) as shown on the FEMA FIRM Maps (see Appendix A). The FEMA figure includes the flood delineation of the Glen Cove Creek which is based on the Flood Insurance Rate Maps, Nassau County, Map Number 36059C0107G, Panel Number 107G, dated September 11, 2009 by FEMA.

3.0 STORMWATER MANAGEMENT

The proposed re-development project includes construction of two proposed residential / commercial buildings, one parking lot, Community Park, Anglers Club, portions of Dickson Street, portions of Road G, Road F and supporting infrastructure within the Phase I project site (27.5 acres).

Proposed stormwater management facilities consist of dry-wells (seepage pits), storm sewer conveyance systems, stormwater irrigation chambers, stormwater storage chambers, green roofs and rain gardens. These facilities follow the guidance of the New York State Stormwater Management Manual and Nassau County Department of Public Works guidelines.

3.1 Stormwater Management Objectives

The primary objectives of the Stormwater Management Plan are as follows, with consideration of minimizing potential risks from stormwater management related structures and impoundments.

1. To improve water quality through capture and treatment of 90% of the average annual stormwater runoff volume or "water quality volume" through Best Management Practices as outlined in the "Stormwater Management Design Manual" by NYSDEC, the latest version (2010).
2. To provide storage and infiltration of 2 inches of runoff from the site drainage area, as required by the "Drainage Requirements" , Nassau County, Department of Public Works (October, 2004).
3. To provide runoff reduction through the use of Green Infrastructure Techniques.

In order to achieve these objectives, the following practices are utilized:

- Three irrigation storage chambers;
- Three stormwater storage chambers;
- Drywells / seepage pits;
- Green roofs; and
- Rain gardens.

The proposed stormwater will be bypassed to the storm conveyance system for the storm events beyond the 2" runoff storage / infiltration requirements, and will be discharged to Glen Cove Greek.

The irrigation storage chambers and stormwater storage chambers are sized for both Phase I improvements and future Phases that are tributary to this area of the site. The drainage areas and hydrological parameters are estimated based upon the conceptual design of the future phases.

3.2 Irrigation Storage from Rooftop

The project includes capture of stormwater runoff to be utilized for irrigation systems within the project site. Runoff from the roofs of the poposed buildings is directed into irrigation chambers and stored for irrigation use on the site. The irrigation chambers have been sized to collect 1" of stormwater from these roofs. Runoff greater than 1" will be discharged to the storm sewer collection system by means of a control structure (weir) located within the irrigation chambers.

Summary of Irrigation Storage Volume (c.f.):

Drainage Area	P-DA-4 & 5 Roof Area Bldgs E and H	P-DA-4a Roof Area Bldg D	P-DA-7 Roof Area Bldg I	Total
Required	12,460 cf	2,916 cf	7,377 cf	22,753 cf
Provided	12,703 cf	3,584 cf	8,636 cf	24,923 cf
	Irrigation Chamber #1	**Irrigation Chamber #2**	**Irrigation Chamber #3**	

The irrigation chambers for Phase I are sized for the Phase I buildings (H and I) as well as future buildings D and E and are based upon a runoff coefficient equal to 1.0. This assumes that there is no runoff reduction within the green roof / roof garden zones: a more conservative approach, resulting in a larger storage volume for irrigation. Calculations are provided in Appendix C.

3.3 Stormwater Infiltration Storage

According to the "Drainage Requirements" of Nassau County, Department of Public Works, the storage for 8" of stormwater runnoff should be provided for the site tributary area. However, due to the site limitations, a waiver has been requested for the storage of less than 8" runoff. The volume of the storage chambers for this project has been designed based on 2" of runoff from the tributary areas. Compensation due to the difference between 5" and 2" of runoff will be waived by Nassau County, since the project does not drain into any County-owned drainage facilities. See attached correspondence from NCDPW included in Appendix C.

Calculations for the required and provided infiltration / storage volume have been included in Appendix C.

Summary of Runoff Storage Volume (c.f.):

Drainage Area	P-DA-3 + P-DA-3a	P-DA-4, 5 & 6	P-DA-7A	P-DA-7B	Interim Block G	Direct Runoff (southeast esplanade)	**Total**
Required	9,081 cf	56,584 cf	16,858 cf	4,349 cf	3,094 cf	1,492 cf	**91,458 cf**
Provided	9,236 cf Drywells	61,182 cf Storage Chamber #8 Irrigation Chamber #1 Irrigation Chamber #2	18,057 cf Storage Chamber #9 Irrigation Chamber #3	4,350 cf Storage Chamber #10	3,140 cf Drywells	0	**95,965 cf**

3.4 Water Quality

In accordance with NYS Stormwater Management Guidelines, consideration has been given to providing water quality enhancement practices for stormwater runoff based on the following methodologies:

a. Stormwater dry well and infiltration storage chambers: the required water quality volumes are calculated based upon the NYSDEC "Stormwater Management Design Manual", Chapter 4 (2010). The calculations are included in Appendix C.

The stormwater infiltration chambers function as both runoff storage and water quality infiltration systems. The required water quality volumes are less than the provided storage volumes. Therefore, the proposed stormwater facilities meet the NYSDEC water quality requirements.

Summary of the Required Water Quality Volume (c.f.):

Drainage Area	P-DA-3	P-DA-4, 5 & 6	P-DA-7A	P-DA-7B
Required (c.f.)	4,526 cf	27,294 cf	8,687 cf	2,435 cf
Provided (c.f.)	9,236 cf Dry wells	44,895 cf Storage #8	9,421 cf Storage #9	4,350 cf Storage #10
Results	**OK**	**OK**	**OK**	**OK**

3.5 Green Roofs

In addition to capturing runoff from the roofs for irrigation use, the roofs of proposed Building H and I will include green / planted roofs as well as amenity / garden space for resident's use. The roofs include a combination of hardscape areas (pools, paths, patios), garden areas, planted roofs (inaccessible roofs to be planted with sedum), and unplanted roofs (mechanical equipment space). The rooftop vegetation allows for reduction of stormwater runoff volume and discharge rate via evaporation and evapotranspiration processes.

The proposed roof areas include:

	Block H	Block I	**Total**
Green Roof (in-accessible / sedum)	24,903 sf	21,603 sf	
Pervious Roof Garden	5,114 sf	8,640 sf	
Total Green Roof	**30,017 sf**	**30,243 sf**	**60,260 sf**
Impervious Roof	41,820 sf	58,284 sf	
Total Roof	**71,837sf**	**88,527 sf**	**160,364 sf**
% Green Roof	**42 %**	**34 %**	**38 %**

3.6 Rain Gardens

Rain Gardens are proposed to be located with the Phase I park space and will provide small areas to manage and treat small volumes of runoff generated within the upper reaches of the community park space. The planting material and soil bed capture and treat the runoff stored in these shallow depressions, thereby reducing runoff volumes and providing water quality enhancement for this area of the site.

4.0 SOIL EROSION AND SEDIMENT CONTROL

The construction of the proposed development will require the excavation and grading of soils on site. The total area of disturbance is approximately 18.4 acres, or 67% of the project site.

During construction of the proposed development, temporary and permanent soil erosion and sediment control measures shall be implemented, to minimize impacts to the surrounding land areas and water bodies.

Soil erosion is controlled by:

- Keeping disturbed areas to a minimum and providing temporary seeding and mulching if construction operations cease for more than 7 days;
- Keeping topsoil stockpiles less than 35 feet high and keeping the side slopes of these stockpiles at or less than 2:1; and
- Constructing a crushed stone tracking pad at the points of egress and ingress for construction vehicles during each phase.

Sedimentation is controlled by:

- Installing silt fence barriers along the base of slopes and around the perimeter of topsoil stockpiles;
- Placing inlet filters over the grate of each stormwater inlet or catch basin as it is constructed to prevent sedimentation within the storm sewer system;
- Cleaning inlet filters and the upstream sides of all silt fencing after each erosion producing storm;
- Operation of temporary sediment traps at low points;
- Use of temporary diversion swales.

Soil erosion and sediment control shall be ensured during the construction period through a program of daily observation and maintenance with particular emphasis on inspection and repair following rain events. All graded areas shall be permanently seeded and landscaped to minimize erosion. All control measures shall be carried out in accordance with NYSDEC

Guidelines for Urban Erosion and Sediment Control. For soil erosion and sediment control plans, notes and details refer to the site plans.

The project has been designed to minimize any potential adverse impacts to surface waters. Any impacts related to project construction would be short-term in nature.

5.0 CONCLUSION

The basic design criteria of proposed stormwater facilities, which are (A) to select feasible SWM practices, (B) to maximize pre-treatment and minimize collective impervious area, and (C) to limit any adverse hydrological and environmental impacts, have been applied to practices of this project.

As presented within this report, the runoff of stormwater in the post development condition is substantially improved in terms of quality and quantity control (storage). The combination of green roofs, runoff collection and re-use (irrigation chambers), runoff capture, storage and infiltration (storage chamber and drywell / seepage pits) water quality treatment (infiltration / storage chambers and dry wells/ seepage pits) and rain gardens, will have a positive effect on water quality and quantity control.

Appendix A
Figures
(FEMA, USGS, Aerial Map, Soil Map, Zoning Map)

N
NORTH

GLEN COVE

Saint Pauls Cemetery

Glen Cove Post Office

Glen Cove Landing

Mosquito Neck

PROJECT LOCATION

GARVIES POINT RD

Glen Cove Creek

Mosquito Cove

Carpenter Neck

Carpenters Neck

SEA CLIFF

4525

4524

250 000

FEET

4523

REFERENCE:
UNITED STATES GEOLOGICAL SURVEY OF
SEA CLIFF, NY QUADRANGLE DATED 2010,

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1025 OLD COUNTRY ROAD
SUITE 420
WESTBURY, NEW YORK 11590
PHONE: (516) 512-7300
FAX: (516) 512-7320

PROJECT TITLE

Glen Cove
Waterfront Redevelopment

City of Glen Cove, Nassau County, NY

SHEET TITLE

Site
Location Map

DATE:	9/26/2012
SCALE:	1"=1000'
DRN. BY:	G.Y.
CK'D BY:	P.A.R.
PROJ. NO.:	03610-001
SHT. NO.:	USGS-1

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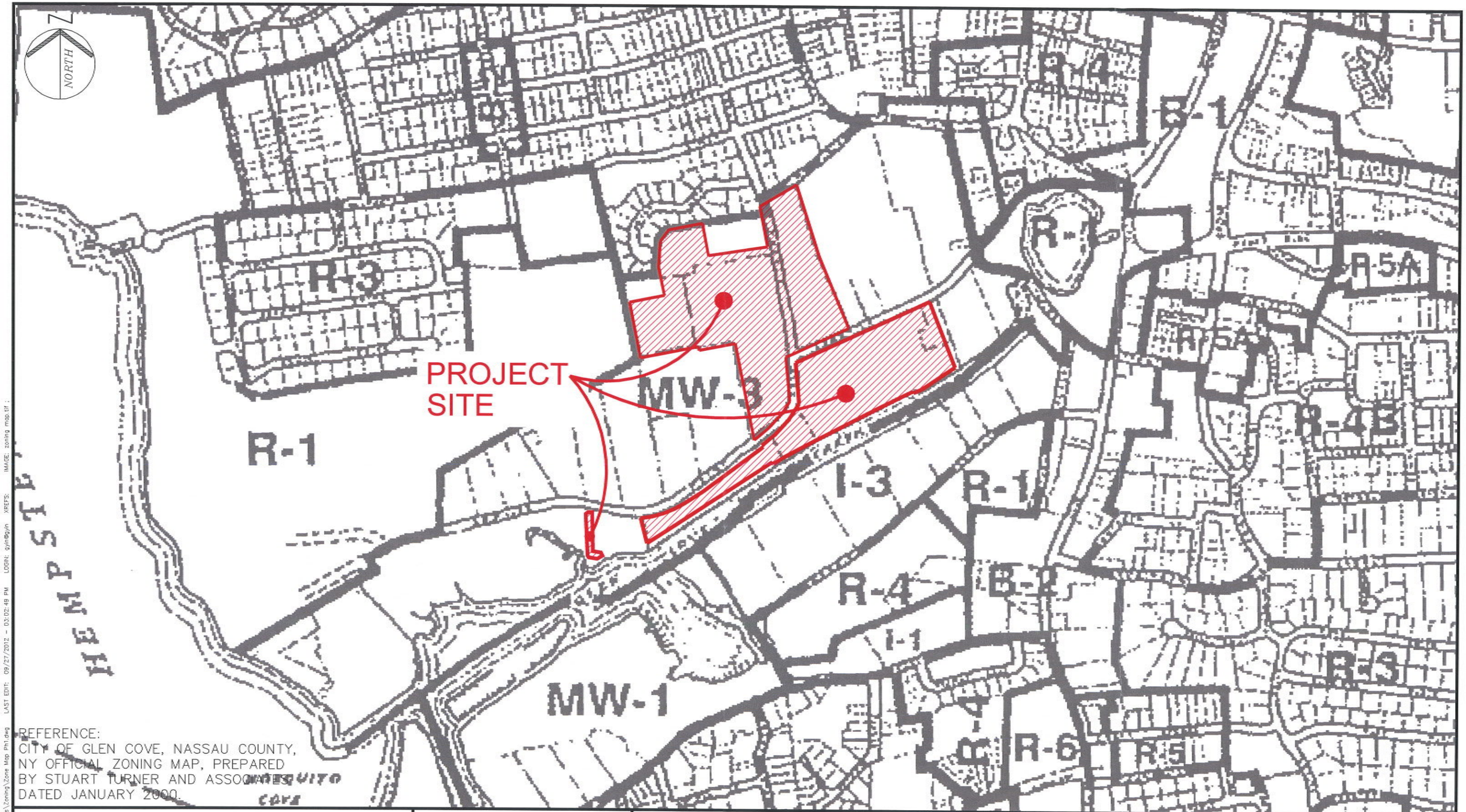

REFERENCE:
CITY OF GLEN COVE, NASSAU COUNTY, NY OFFICIAL ZONING MAP, PREPARED BY STUART TURNER AND ASSOCIATES, DATED JANUARY 2000.

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PROJECT TITLE
Glen Cove
Waterfront Redevelopment
Phase 1
City of Glen Cove, Nassau County, NY

SHEET TITLE
Zoning Map

DATE:	9/26/2012
SCALE:	1"=500'
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CK'D BY:	P.A.R.
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SHT. NO.:	Z-1

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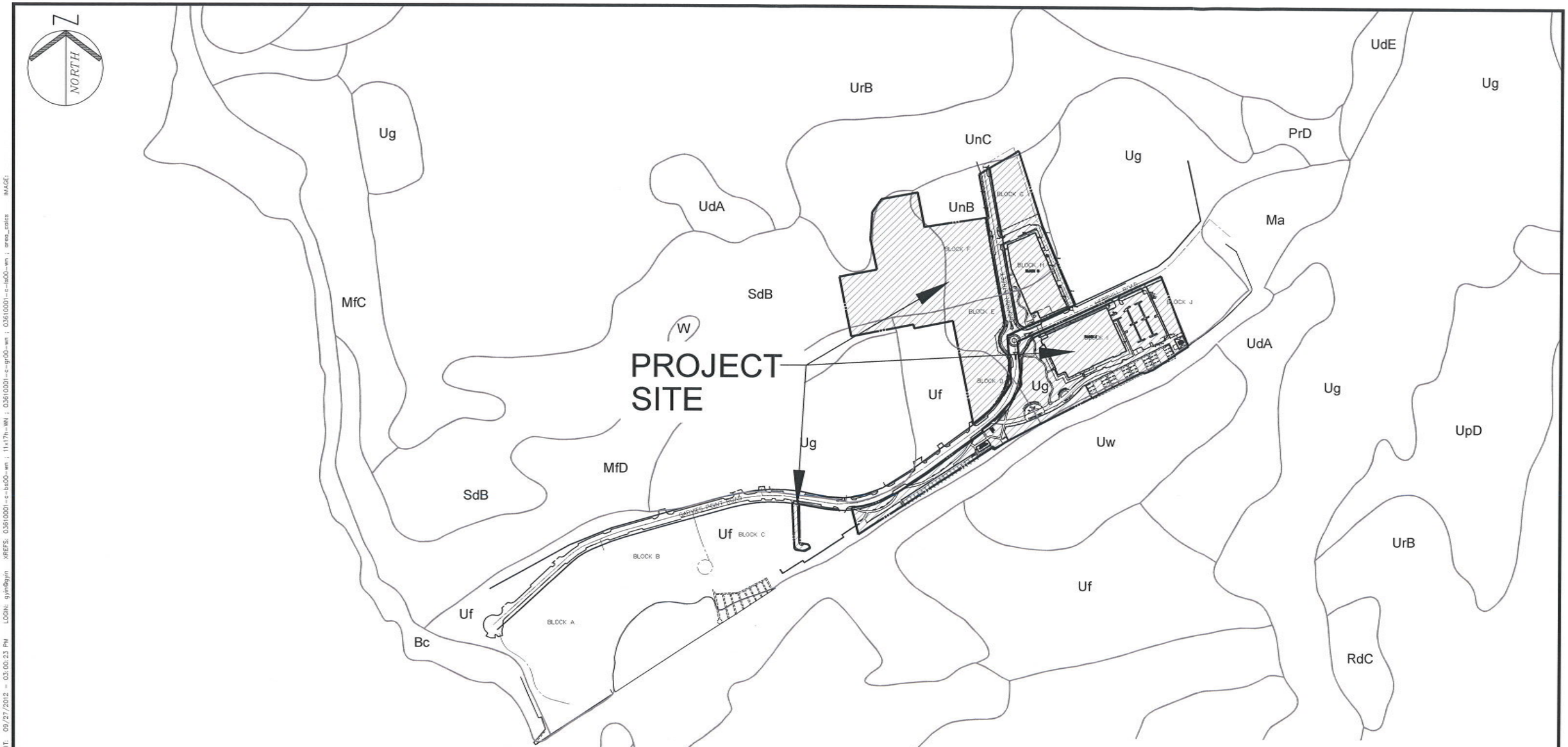

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)

1 inch = 500 ft.

SOIL TYPES:

- MfD: Montauk fine sandy loam, 15 to 25 percent slopes;
- SdB: Scio silt loam, till substratum, 3 to 8 percent slopes;
- Uf: Udorthents, refuse substratum;
- Ug: Urban land;
- UnB: Urban land - Montauk complex, 3 to 8 percent slopes.

REFERENCE:
NASSAU COUNTY, NY, SOIL SURVEY AS PER USDA NATURAL RESOURCES CONSERVATION SERVICE, SURVEY AREA VERSION 5, DATED 12/11/06.

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PROJECT TITLE
Glen Cove
Waterfront Redevelopment
City of Glen Cove, Nassau County, NY

SHEET TITLE
Soil Map with Proposed Improvements

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CK'D BY:	P.A.R.
PROJ. NO.:	03610-001
SHT. NO.:	SOIL-PH1

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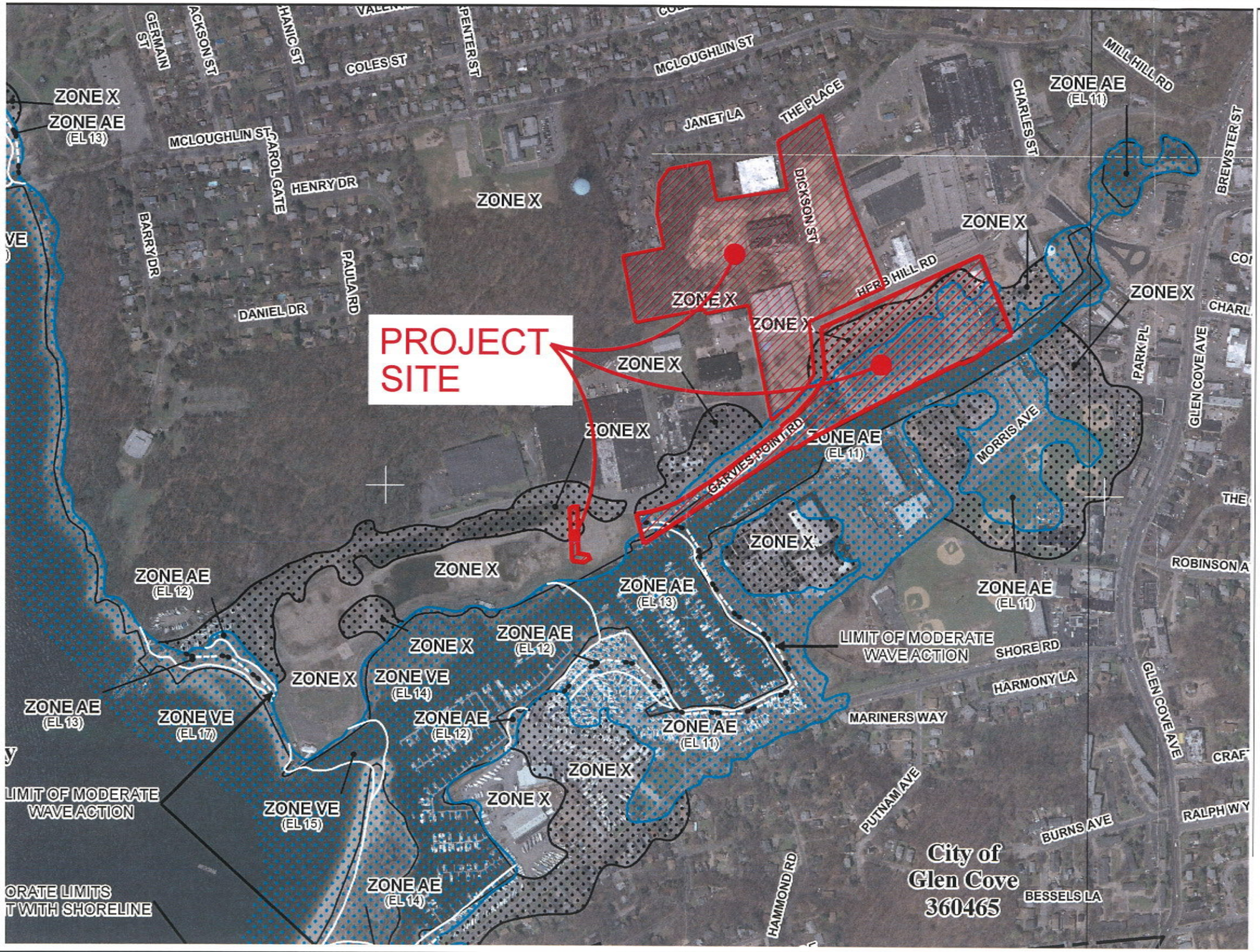

NORTH

REFERENCE:
FEMA INFORMATION FROM FLOOD INSURANCE RATE MAP, NASSAU COUNTY, NY, MAP NUMBER 36059C0107 G, PANEL 107G, DATED SEPTEMBER 11, 2009.

ELEVATION REFERENCE NGVD 88

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Limited detail cross section line
- Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4276000 FT N — 1000-meter Universal Transverse Mercator grid values, zone 18
- 600000 FT — 5000-foot grid values: statename State Plane coordinate system, spzone (FIPSZONE fipszone), spherename projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
April 2, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 11, 2009 - to change Base Flood Elevations, to change Special Flood Hazard Areas, to update map format, to change zone designations, to update the effects of wave action, to incorporate Primary Frontal Dune analysis, to reflect revised shoreline, to reflect the effects of coastal erosion, and to reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

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PROJECT TITLE
Glen Cove
Waterfront Redevelopment
City of Glen Cove, Nassau County, NY

SHEET TITLE
FEMA Flood Map

DATE:	9/26/2012
SCALE:	1"=500'
DRN. BY:	G.Y.
CK'D BY:	P.A.R.
PROJ. NO.:	03610-001
SHT. NO.:	FEMA-1

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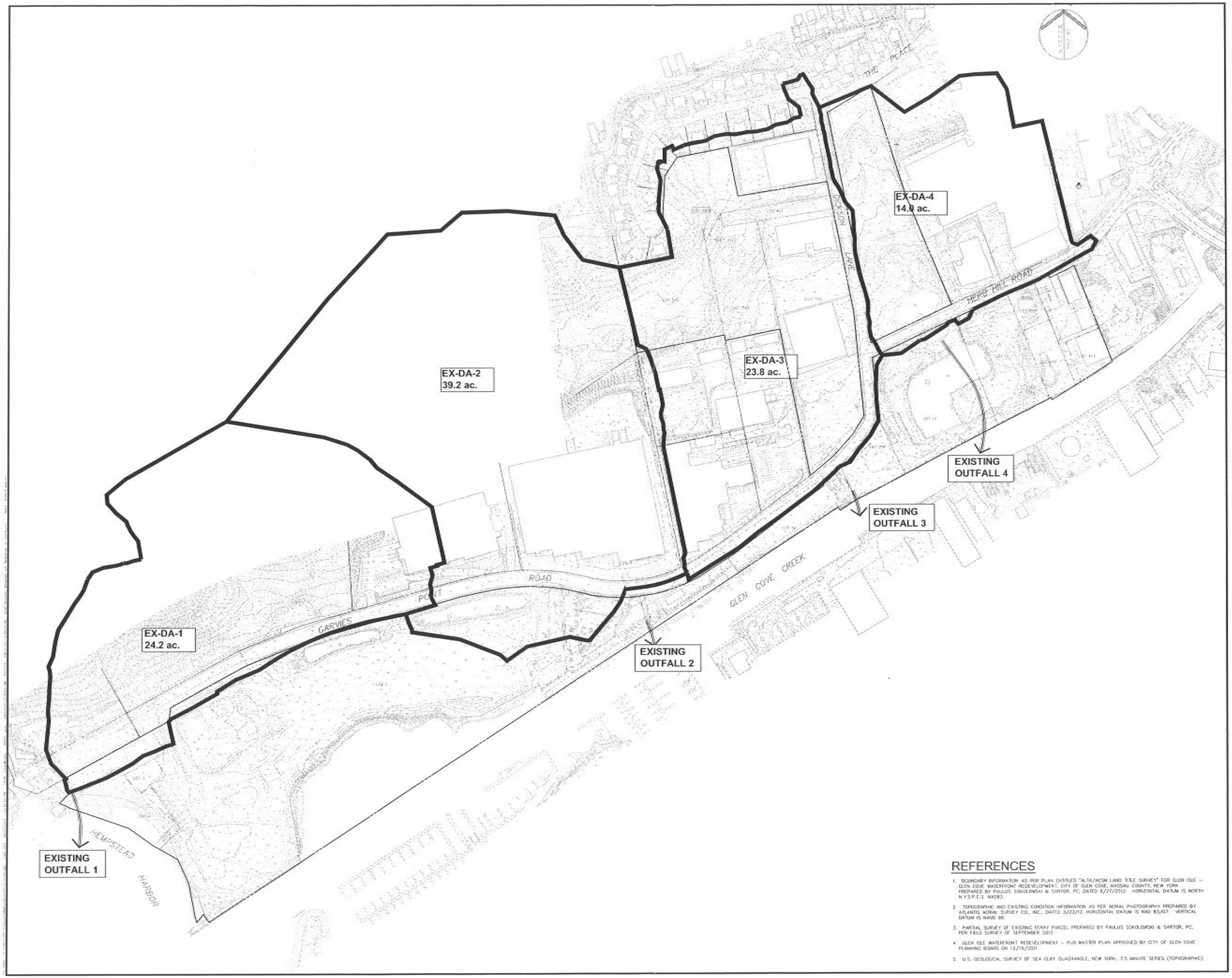
Appendix B
Pre and Post Development Drainage Plans



REFERENCES

1. BOUNDARY INFORMATION AS PER PLAN ENTITLED "ALTA/ACSM LAND TITLE SURVEY" FOR GLEN ISLE – GLEN COVE WATERFRONT REDEVELOPMENT, CITY OF GLEN COVE, NASSAU COUNTY, NEW YORK PREPARED BY PAULUS SOKOLOWSKI & SARTOR, PC, DATED 8/27/2012. HORIZONTAL DATUM IS NORTH N.Y.S.P.C.S. NAD83.
2. TOPOGRAPHIC AND EXISTING CONDITION INFORMATION AS PER AERIAL PHOTOGRAPHY PREPARED BY ATLANTIS AERIAL SURVEY CO., INC., DATED 3/23/12. HORIZONTAL DATUM IS NAD 83/07. VERTICAL DATUM IS NAVD 88.
3. PARTIAL SURVEY OF EXISTING FERRY PARCEL PREPARED BY PAULUS SOKOLOWSKI & SARTOR, PC. PER FIELD SURVEY OF SEPTEMBER 2012.
4. GLEN ISLE WATERFRONT REDEVELOPMENT – PUD MASTER PLAN APPROVED BY CITY OF GLEN COVE PLANNING BOARD ON 12/19/2011.
5. U.S. GEOLOGICAL SURVEY OF SEA CLIFF QUADRANGLE, NEW YORK, 7.5 MINUTE SERIES (TOPOGRAPHIC)

REV. / ISSUE	DATE	BY	CHK	DESCRIPTION
1	10/29/12	JLC	PAR	PUD SUBMISSION

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Fax. 212 477 8544

ORIENTATION / KEY PLAN

GRAPHIC SCALE
(IN FEET)
1 inch = 300 ft.

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CLIENT

RXR GLEN ISLE PARTNERS LLC

PROJECT

GLEN ISLE WATERFRONT REDEVELOPMENT PHASE I

CITY OF GLEN COVE, NASSAU COUNTY, NEW YORK

SHEET TITLE

EXISTING DRAINAGE AREA MAP

JOB NO.:	03810-0001
DATE:	9/27/2012
DRAWN:	GY
CHECK:	PAR
SCALE:	AS SHOWN
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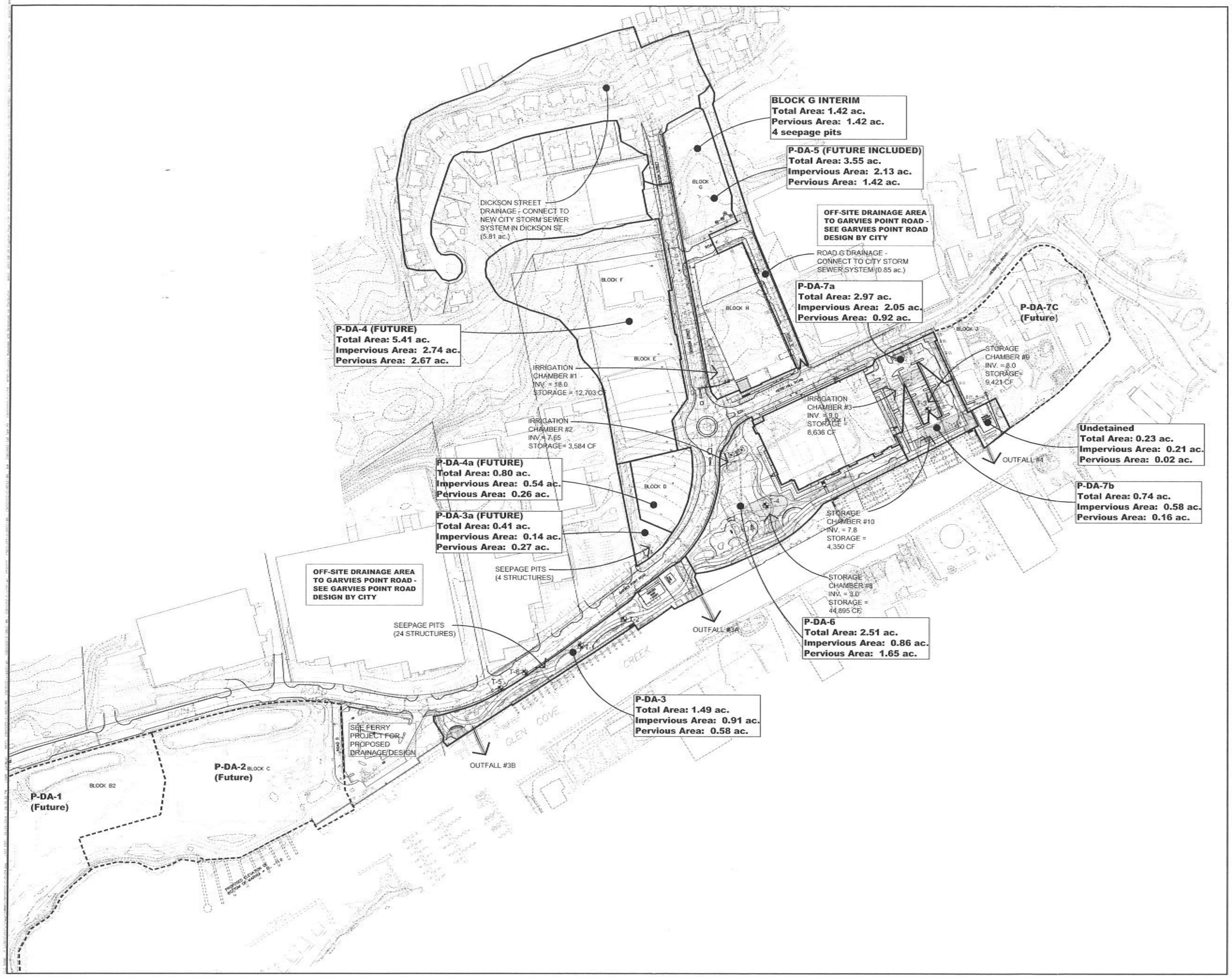
SHEET OF	
SHEET NO.	X-DA-1

Appendix C
Irrigation, Storage & Water Quality Calculations



REV. / ISSUE	DATE	DESCRIPTION
1	10/01/13	LMF PAR PUB SITE PLAN SUBMISSION
2	5/23/14	REV. PER CITY COMMENTS

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ORIENTATION / KEY PLAN

GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.

PAULUS, SOKOLOWSKI AND SARTOR ENGINEERING, P.C.
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CLIENT

RXR GLEN ISLE PARTNERS LLC

PROJECT

GARVIES POINT WATERFRONT REDEVELOPMENT PHASE I

CITY OF GLEN COVE, NASSAU COUNTY, NEW YORK

SHEET TITLE

PROPOSED DRAINAGE AREA MAP

JOB NO: 03510-0001
DATE: 9/27/2012
DRAWN: LMF
CHECK: PAR
SCALE: AS SHOWN

BINDING ORDER:
SHEET OF
SHEET NO:

P-DA-1

Ruskan, Patricia

From: Ennis, Gerard <gennis@nassaucountyny.gov>
Sent: Thursday, March 27, 2014 1:09 PM
To: Ruskan, Patricia
Cc: Davenport, Joseph; Raio, David M; Wehrum, Trey
Subject: RE: Glen Isle Development

Patti,

I just wanted to follow up on our previous discussion regarding the test hole data and preliminary drainage design for the above project.

As discussed, the subdivision plan documents being prepared by your office will require NCDPW signature/approval prior to being filed in the NC Clerks Office. In cases where Nassau County drainage facilities or roadways may be impacted by stormwater overflow, The NCDPW would require that a developer provide for eight (8) inches of storage for the site tributary area. As has been determined in this case, the overflow above the on-site storage of 2 inches will be discharged to a NYS regulated waterway and does not impact any NC facilities. The Nassau County Department of Public Works will accept a design parameter of 2 inches of storage in this case, provided all other agencies holding jurisdiction are agreeable.

In addition, this office confirms that the field work associated with the Soil Test Pit Plan (Phase I) has been completed as proposed. The data collected will be used in the design and placement of the shallow stormwater storage chambers. This office requires no additional testing at this time.

Please contact me if you have any questions.

Jerry

From: Ruskan, Patricia [mailto:pruskan@psands.com]
Sent: Wednesday, March 12, 2014 1:40 PM
To: Ennis, Gerard
Cc: Davenport, Joseph; Raio, David M; Wehrum, Trey
Subject: RE: Glen Isle Development

Jerry

Something is very strange with emails to the County that originate from our office (replies seem to get through). I will check with our IT dept if you could also check with yours to make sure that we are authorized senders to the County.

Here is the email that I sent late last week and the one I sent earlier today.

I think Joe Davenport forwarded the emails to Dave (re the sewers) that I resent to Joe earlier today.

Please confirm that you received this email. thank you -

Patti Ruskan
PS&S
732-584-0479

From: Ennis, Gerard [mailto:gennis@nassaucountyny.gov]
Sent: Wednesday, March 12, 2014 2:33 PM
To: Ruskan, Patricia
Cc: Davenport, Joseph; Raio, David M
Subject: Glen Isle Development

Patti,

I got your telephone message but to date I have not received anything via e-mail regarding the drainage alternative work

PS&S
integrating design & engineering

Paulus, Sokolowski and Sartor Engineering, PC
67A Mountain Blvd. Ext.
Warren, NJ 07059
Tel: 732-560-9700 Fax: 732-764-6565

IRRIGATION DESIGN PROVIDED
(COLLECTION FROM ROOF AREAS ONLY)

DATE: 5/23/2014
REVISION DATE & DESCRIPTION:
PROJECT NO.: 03610-001
PROJECT NAME: **Garvies Point**
Garvies Point Waterfront Redevelopment - PHASE I
PROJECT TOWN: City of Glen Cove, NY
PREPARED BY: PR

Description	Roof Area		Volume Collected from 1" Runoff (I) ~ A x I	StormTrap Storage Provided
	(AC)	(SF)	(CF)	(CF)
Irrigation Chamber #1 P-DA-4 & 5				
Roof Area E (DA 4)	1.78	77,681	6,473	
Roof Area H (DA 5)	1.65	71,837	5,986	
Total Roof Area	3.43	149,518	12,460	12,703
Irrigation Chamber #2 P-DA-4a				
Roof Area D	0.80	34,991	2,916	
Total Roof Area	0.80	34,991	2,916	3,584
Irrigation Chamber #3 P-DA-7a				
Roof Area I	2.03	88,527	7,377	
Total Roof Area	2.03	88,527	7,377	8,636
Total Roof All Areas	**4.23**	**184,509**	**22,753**	**24,923**

Notes:
1. See Water Demand Calculations for further Irrigation demands
2. For sizing of irrigation chamber, runoff coefficient for roof assumed to be 1.0 (assumes no runoff reduction within green roof zones to provide larger storage volume)
3. Roof Areas D and E are estimated for future developments.

DRAINAGE CALCULATIONS

C_{IMP}=0.95
C_{PER}=0.30
$C_{GREEN\ ROOF}$=0.50

10' INSIDE DIA. DRYWELL CAPACITY = 78.5 CF/LF
DESIGN INFILTRATION STRUCTURES FOR 2"(0.167') STORAGE OF RAINFALL

DRAINAGE AREA 3 (P-DA-3 + P-DA-3A)

-P-DA-3:

ROOF:	2,816 SF @ 0.95 =	2,675 SF
PAVEMENT:	36,823 SF @ 0.95 =	34,982 SF
LANDSCAPE:	25,265 SF @ 0.30 =	7580 SF
	TOTAL =	45,237 SF

45,237 SF x 2"/12" = 7,540 CF
USE 24-10' DIA. @ 4' EFFECTIVE DEPTH DRYWELLS
TOTAL EFFECTIVE VOLUME P-DA-3 = 7,540 CF

-P-DA-3A:

ROOF:	0 SF @ 0.95 =	0 SF
PAVEMENT:	6,062 SF @ 0.95 =	5,759 SF
LANDSCAPE:	11,616 SF @ 0.30 =	3,485 SF
	TOTAL =	9,244 SF

9,244 SF x 2"/12" = 1,541 CF
USE 4-10' DIA. @ 5.4' EFFECTIVE DEPTH DRYWELLS
TOTAL EFFECTIVE VOLUME P-DA-3A = 1,696 CF

-DRAINAGE AREA 3 (TOTAL):
REQUIRED STORAGE = 7,540 CF + 1,541 CF = 9,081 CF
PROVIDED STOAGE = 7,540 CF + 1,696 CF = 9,236 CF

DRAINAGE AREA 4/5/6 (P-DA-4 + P-DA-5 + P-DA-6)

-P-DA-4 (FUTURE):

(FUTURE BLOCK E):	61,522 SF @ 0.95 =	58,446 SF
GREEN ROOI	23,051 SF @ 0.50 =	11,526 SF
PAVEMENT:	57,832 SF @ 0.95 =	54,940 SF
LANDSCAPE:	93,187 SF @ 0.30	27,956 SF
	TOTAL =	152,868 SF

152,868 SF x 2"/12" = 25,478 CF

-P-DA-4A (FUTURE):

(FUTURE BLOCK D):	23,733 SF @ 0.95 =	22,546 SF
GREEN ROOI	6,216 SF @ 0.50 =	3,108 SF
PAVEMENT:	0 SF @ 0.95 =	0 SF
LANDSCAPE:	5,042 SF @ 0.30	1,513 SF
	TOTAL =	27,167 SF

27,167 SF x 2"/12" = 4,528 CF

-P-DA-5 (FUTURE BLOCK G + BLOCK H):

(FUTURE BLOCK G + BLOCK H):	63,855 SF @ 0.95 =	60,662 SF
GREEN ROOI	24,903 SF @ 0.50 =	12,452 SF
PAVEMENT:	28,958 SF @ 0.95 =	27,510 SF
LANDSCAPE:	37,082 SF @ 0.30	11,125 SF
	TOTAL =	111,749 SF

111749 SF x 2"/12" = 18,625 CF

-P-DA-6 (RENAISSANCE PARK):

ROOF:	0 SF @ 0.95 =	0 SF
PAVEMENT:	37,651 SF @ 0.95 =	35,769 SF
LANDSCAPE:	71,874 SF @ 0.30	21,562 SF
	TOTAL =	57,331 SF

57,331 SF x 2"/12" = 9,555 CF

-DRAINAGE AREA 4/5/6 (TOTAL):
REQUIRED STORAGE = 25,478 CF + 4,528 CF + 18,625 CF + 9,555 CF = 58,186 CF

USE:

-STORAGE #8:
STORMTRAP OPEN BOTTOM 5'-8" INSIDE HEIGHT
4'-8" EFFECTIVE DEPTH
9,613 SF EFFECTIVE FOOTPRINT
= 44,895 CF

-IRRIGATION #1:
STORMTRAP:
5'-8" INSIDE HEIGHT
4'-8" EFFECTIVE DEPTH
2,720 SF EFFECTIVE FOOTPRINT
= 12,703 CF

-IRRIGATION #2:
STORMTRAP:
5'-8" INSIDE HEIGHT
4'-8" EFFECTIVE DEPTH
767 SF EFFECTIVE FOOTPRINT
= 3,584 CF

TOTAL STORAGE PROVIDED = 44,895 CF + 12,703 CF + 3,584 CF = 61,182 CF

DRAINAGE AREA 7A (P-DA-7A)

-P-DA-7A:

ROOF:	58,284 SF @ 0.95 =	55,370 SF
GREEN ROOI	21,602 SF @ 0.50 =	10,801 SF
PAVEMENT:	31,062 SF @ 0.95 =	29,509 SF
LANDSCAPE:	18,230 SF @ 0.30	5,469 SF
	TOTAL =	101,149 SF

101,149 SF x 2"/12" = 16,858 CF

USE:

-STORAGE #9:
STORMTRAP OPEN BOTTOM 3'-6" INSIDE HEIGHT
2'-6" EFFECTIVE DEPTH
3,768 SF EFFECTIVE FOOTPRINT
= 9,421 CF

-IRRIGATION #3:
STORMTRAP:
5'-8" INSIDE HEIGHT
4'-8" EFFECTIVE DEPTH
1,849 SF EFFECTIVE FOOTPRINT
= 8,636 CF

TOTAL STORAGE PROVIDED = 9,421 CF + 8,636 CF = 18,057 CF

DRAINAGE AREA 7B (P-DA-7B)

-P-DA-7B:

ROOF:	0 SF @ 0.95 =	0 SF
PAVEMENT:	25,265 SF @ 0.95 =	24,002 SF
LANDSCAPE:	6,970 SF @ 0.30	2,091 SF
	TOTAL =	26,093 SF

26,093 SF x 2"/12" = 4,349 CF

USE:

-STORAGE #10:
STORMTRAP OPEN BOTTOM 2'-0" INSIDE HEIGHT
1'-6" EFFECTIVE DEPTH
2,900 SF EFFECTIVE FOOTPRINT
= 4,350 CF

TOTAL STORAGE PROVIDED = 4,350 CF

INTERIM BLOCK G

ROOF:	0 SF @ 0.95 =	0 SF
PAVEMENT:	0 SF @ 0.95 =	0 SF
LANDSCAPE:	61,875 SF @ 0.30	18,563 SF
	TOTAL =	18,563 SF

18,563 SF x 2"/12" = 3,094 CF
USE 4-10' DIA. @ 10' EFFECTIVE DEPTH DRYWELLS*
TOTAL EFFECTIVE VOLUME INTERIM BLOCK G = 3,140 CF

* TO BE CONFIRMED WITH TEST HOLE PRIOR TO CONSTRUCTION

PS&S
integrating design & engineering

Paulus, Sokolowski and Sartor Engineering, PC
67A Mountain Blvd. Ext.
Warren, NJ 07059
Tel: 732-560-9700 Fax: 732-764-6565

Water Quality Volume per NYSDEC

DATE: 5/2/2011
Revision DATE: 5/23/2014
PROJECT NO.: 03610-001
PROJECT NAME: **Glen Isle**
Glen Cove Waterfront Redevelopment - PHASE I
PROJECT TOWN: City of Glen Cove, NY
PREPARED BY: PR

Description	Total Area		Pervious Area (incl green roof areas)		Impervious Area (incl impervious roof areas)			Ratio including Impervious Coverage (Rv)	90% Rainfall Event number (P)	Water Quality Volume Required (WQv) - NYSDEC	
	(acre)	(sf)	(acre)	(sf)	(acre)	(sf)	%			(acre-ft)	(ft^3)
P-DA-3 (P-DA-3 + P-DA-3a)	1.90	82,582 82,582	0.85	36,881	1.05	45,701	55%	0.5481	1.20	0.104	4,526
P-DA-4	5.41	235,592 235,592	2.67	116,238	2.74	119,354	51%	0.5060	1.20	0.274	11,920
P-DA-4a	0.80	34,991 34,990	0.26	11,258	0.54	23,732	68%	0.6604	1.20	0.053	2,311
P-DA-5	3.55	154,798 154,798	1.42	61,985	2.13	92,813	60%	0.5896	1.20	0.210	9,127
P-DA-6	2.51	109,525 109,525	1.65	71,874	0.86	37,651	34%	0.3594	1.20	0.090	3,936
P-DA-7a	2.97	129,178 129,178	0.91	39,832	2.05	89,346	69%	0.6725	1.20	0.199	8,687
P-DA-7b	0.74	32,235 32,235	0.16	6,970	0.58	25,265	78%	0.7554	1.20	0.056	2,435
TOTAL	17.88	778,901 778,900	7.92	345,038	9.96	433,862	56%	0.5513	1.20	0.986	42,942

References / Notes:

1. Impervious Coefficient (C_R) = 0.95 Pervious Coefficient (C_P) = 0.30 Pervious Roof Coefficient (C_P) = 0.50
2. New York State Stormwater Management Design Manual, April 2008, Chapter 4
   WQv = [(P) x (Rv) x (A)] / 12
   Rv = (0.05) + (0.009 x I) ~ minimum Rv = 0.2
   I ~ percent impervious cover
   P = 90% Rainfall Event Number (Figure 4.1)
   A = Site area in acres (contributing area)
3. 1.8 acres of water and wetland areas are not included in drainage area calculations since they cannot be captured

GARVIES POINT REDEVELOPMENT PROJECT - PHASE 1

Date: 5/6/2014

Project Site Coverage Calcs P-DA-3 (1.49 ac)

Description	%	Area (SF)	Area (ac)	C	C x A
Buildings					
Anglers Club		2,302.0	0.053	See below	N/A
Pump Station		514.0	0.012	See below	N/A
Impervious Pavement		36,823.0	0.85	0.95	0.803
Impervious Roof					
Anglers Club/Pump Station		2,816.0	0.06	0.95	0.061
Impervious Roof Garden			***N/A***		
Pervious - Landscaped Areas		25,265.0	0.58	0.30	0.174
Pervious (Green) Roof			***N/A***		
Pervious Roof Garden			***N/A***		
TOTALS		64,904.0	1.49		1.038
WEIGHTED C					0.70

GARVIES POINT REDEVELOPMENT PROJECT - PHASE 1

Date: 5/6/2014

Project Site Coverage Calcs P-DA-3A (0.41 ac)

Description	%	Area (SF)	Area (ac)	C	C x A
Buildings					
n/a		0.0	0.000	See below	N/A
Impervious Pavement		6,062.0	0.14	0.95	0.132
Impervious Roof					
Anglers Club/Pump Station		0.0	0.00	0.95	0.000
Impervious Roof Garden			***N/A***		
Pervious - Landscaped Areas		11,616.0	0.27	0.30	0.080
Pervious (Green) Roof			***N/A***		
Pervious Roof Garden			***N/A***		
TOTALS		17,678.0	0.41		0.212
WEIGHTED C					0.52

GARVIES POINT REDEVELOPMENT PROJECT - PHASE 1

Date: 5/6/2014

Project Site Coverage Calcs P-DA-4 (5.41 ac)

Description	%	Area (SF)	Area (ac)	C	C x A
Buildings					
E		77,681.0	1.783	See below	N/A
F		15,835.0	0.364	See below	N/A
Impervious Pavement		57,832.0	1.33	0.95	1.26
Impervious Roof					
E		37,265.0	0.86	0.95	0.81
F		15,835.0	0.36	0.95	0.35
Impervious Roof Garden					
E (17,365 sf)	48.5%	8,422.0	0.19	0.95	0.18
F (0 sf)				***NA***	
Pervious Landscaped Areas		84,244.0	1.93	0.30	0.58
Pervious (Green) Roof					
E		23,051.0	0.53	0.50	0.26
F				***NA***	
Pervious Roof Garden					
E (17,365 sf)	51.5%	8,943.0	0.21	0.30	0.06
F (0 sf)				***NA***	
TOTALS		235,592	5.41		3.51
WEIGHTED C					0.65

GARVIES POINT REDEVELOPMENT PROJECT - PHASE 1

Date: 5/6/2014

Project Site Coverage Calcs P-DA-4a (0.80 ac)

Description	%	Area (SF)	Area (ac)	C	C x A
Buildings					
D		34,991.0	0.803	See below	N/A
Impervious Pavement		0	0.00	0.95	0.00
Impervious Roof					
D		19,607.0	0.45	0.95	0.43
Impervious Roof Garden					
D (9,168 sf)	45.0%	4,125.6	0.09	0.95	0.09
Pervious Landscaped Areas		0	0.00	0.30	0.00
Pervious (Green) Roof					
D		6,216.0	0.14	0.50	0.07
Pervious Roof Garden					
D (9,168 sf)	55.0%	5,042.4	0.12	0.30	0.03
TOTALS		34,991	0.80		0.62
WEIGHTED C					0.78

GARVIES POINT REDEVELOPMENT PROJECT - PHASE 1

Date: 5/6/2014

Project Site Coverage Calcs P-DA-5 (3.55 ac)

Description	%	Area (SF)	Area (ac)	C	C x A
Buildings					
G		22,035.0	0.506	See below	N/A
H		71,837.0	1.649	See below	N/A
Impervious Pavement		28,958	0.66	0.95	0.63
Impervious Roof					
G		22,035.0	0.51	0.95	0.48
H		34,053.0	0.78	0.95	0.74
Impervious Roof Garden					
G (0 sf)	0.0%	0.0	0.00	0.95	0.00
H (12,881 sf)	60.3%	7,767.2	0.18	0.95	0.17
Pervious Landscaped Areas		31,968.0	0.73	0.30	0.22
Pervious (Green) Roof					
G		0.0	0.00	0.50	0.00
H		24,903.0	0.57	0.50	0.29
Pervious Roof Garden					
G (0 sf)	0.0%	0.0	0.00	0.30	0.00
H (12,881 sf)	39.7%	5,113.8	0.12	0.30	0.04
TOTALS		154,798	3.55		2.57
WEIGHTED C					0.72

Dickson Street is not included in these calculations

GARVIES POINT REDEVELOPMENT PROJECT - PHASE 1

Date: 5/6/2014

Project Site Coverage Calcs P-DA-6 (2.51 ac)

Description	%	Area (SF)	Area (ac)	C	C x A
Buildings N/A					
Impervious Pavement		37,651.0	0.86	0.95	0.82
Impervious Roof N/A		0.0	0.00	0.95	0.00
Impervious Roof Garden			***NA***		
Pervious Landscaped Areas		71,874.0	1.65	0.30	0.50
Pervious (Green) Roof			***NA***		
Pervious Roof Garden			***NA***		
TOTALS		109,525.0	2.51		1.32
WEIGHTED C					0.52
Proposed Wetlands/Docks		21,864.0	0.502	0.150	0.075

GARVIES POINT REDEVELOPMENT PROJECT - PHASE 1

Date: 5/6/2014

Project Site Coverage Calcs P-DA-7a (2.97 ac)

Description	%	Area (SF)	Area (ac)	C	C x A
Buildings					
I		88,527.0	2.032	See below	N/A
Impervious Pavement		31,062	0.71	0.95	0.68
Impervious Roof		41,868.5	0.96	0.95	0.91
Impervious Roof Garden					
I (25,083 sf)	*17.8%*	16,415.5	0.38	0.95	0.36
Pervious Landscaped Areas		9,589	0.22	0.30	0.07
Pervious (Green) Roof					
I (25,083 sf)	*23.5%*	21,602.00	0.50	0.50	0.25
Pervious Roof Garden					
I (25,083 sf)	*9.4%*	8,641.0	0.20	0.30	0.06
TOTALS		129,178	2.97		2.32
WEIGHTED C					0.78

GARVIES POINT REDEVELOPMENT PROJECT - PHASE 1

Date: 5/6/2014

Project Site Coverage Calcs P-DA-7b (0.74 ac)

Description	%	Area (SF)	Area (ac)	C	C x A
Buildings					
n/a					N/A
Impervious Pavement		25,265	0.58	0.95	0.55
Pervious Landscaped Areas		6,970	0.16	0.30	0.05
TOTALS		32,235.0	0.74		0.60
WEIGHTED C					0.81

Appendix D
Storm Sewer Calculations

THOMAS R. SUOZZI
COUNTY EXECUTIVE

RAYMOND A. RIBEIRO, P.E.
COMMISSIONER

COUNTY OF NASSAU
DEPARTMENT OF PUBLIC WORKS
1194 PROSPECT AVENUE
WESTBURY, NEW YORK 11590-2723

November 26, 2007

The Department of Public Works has received your letter of October 9, 2007, requesting the Department's applicable drainage design criteria for storm water conveyance systems. The following standards are typical for improving the drainage system associated with a recent roadway reconstruction design project:

1. The Rational Method is used to compute peak runoff rates.
2. The storm water collection systems were designed with five minute times of concentration at each inlet.
3. All Storm water drainage pipes are reinforced concrete with a Manning's "n" coefficient equal to 0.015 to determine flow.
4. Travel time in conveyance pipes was not considered in the collection system analysis, which yields a conservative approach for long pipe runs.
5. The rainfall intensity used for pipe design is determined using the formula $I=120/(T+20)$, the rainfall intensity becomes 4.8 inches per hour.
6. A weighted area method was used to compute the 'C' value for the Rational Formula.
7. The maximum area contributing flow to a Type "3" catch basin is 6 acres.
8. The maximum area contributing flow to a Type "1" catch basin is 3 acres.
9. The maximum pipe slope used is an analysis is 10%.
10. The minimum cover for reinforced concrete pipe is 2 feet.

Concerning the request for rainfall information for the storm events of July 18, 2007 and August 8, 2007, Nassau County can not provide specific information for rainfall at that specific location. However, Nassau County does maintain rainfall information recorded at its weather station in Mineola. The following information is provided:

July 18th	Total rainfall 3.82" – 6 hours	Greatest intensity 2.94" – 1 hour
August 8th	Total rainfall 2.25" – 6 hours	Greatest intensity 2.00" – 2 hours

Glen Isle Redevelopment
Active Scenario: Base
Conduit FlexTable: Combined Pipe/Node Report

Start Node	Stop Node	Invert (Upstream) (ft)	Invert (Downstream) (ft)	Manning's n	Diameter (in)	Length (Unified) (ft)	Slope (%)	Material	Cover (Start) (ft)	Cover (Stop) (ft)	System Drainage Area (acres)	Upstream Inlet C	System CA (acres)	System Intensity (in/h)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Velocity (ft/s)	Flow (ft³/s)	Capacity (Design) (ft³/s)
DI 308	DI 310	31.69	29.50	0.015	15	110	2.00	Corrugated HDPE (Smooth Interior)	6.86	3.06	0.5	0.913	0.421	4.800	32.26	29.93	32.48	30.38	5.40	2.04	7.91
DI 310	DI 312	25.38	20.35	0.015	15	168	3.00	Corrugated HDPE (Smooth Interior)	7.17	3.01	0.6	0.905	0.508	4.800	26.01	20.77	26.25	21.45	6.59	2.46	9.69
DI 312	DI 313	16.50	12.00	0.015	15	150	3.00	Corrugated HDPE (Smooth Interior)	6.85	3.20	0.8	0.900	0.636	4.800	17.21	12.48	17.49	13.25	7.01	3.08	9.70
DI 337	MH 360	15.90	14.00	0.015	24	127	1.50	Corrugated HDPE (Smooth Interior)	5.25	4.00	1.9	0.300	1.246	4.800	17.46	15.33	18.25	16.44	8.44	18.70	23.98
MH 394	OF 395	3.83	3.50	0.015	36	65	0.51	Corrugated HDPE (Smooth Interior)	4.57	4.00	5.8	(N/A)	3.454	4.800	6.10	5.53	6.82	6.44	6.63	39.02	41.19
DI 307	DI 308	31.96	31.79	0.015	15	33	0.50	Corrugated HDPE (Smooth Interior)	6.89	6.76	0.3	0.752	0.259	4.800	32.44	32.26	32.57	32.40	2.87	1.26	3.97
DI 309	DI 310	29.70	29.45	0.015	15	25	1.00	Corrugated HDPE (Smooth Interior)	2.75	3.10	0.1	0.661	0.048	4.800	29.89	29.62	29.95	29.70	2.24	0.23	5.60
DI 356	MH 360	15.83	14.31	0.015	24	152	1.00	Corrugated HDPE (Smooth Interior)	3.97	3.69	3.5	0.581	2.044	4.800	16.96	15.32	17.41	15.92	6.25	9.89	19.61
MH 360	MH 364	13.50	11.13	0.015	24	79	3.00	Corrugated HDPE (Smooth Interior)	4.50	4.75	5.4	(N/A)	3.290	4.800	15.34	12.57	16.73	14.75	12.11	28.59	33.96
DI 311	DI 312	20.60	20.35	0.015	15	25	1.00	Corrugated HDPE (Smooth Interior)	2.75	3.00	0.1	0.679	0.070	4.800	20.83	20.56	20.90	20.66	2.52	0.34	5.60
DI 314	DI 313	11.73	11.56	0.015	15	25	0.68	Corrugated HDPE (Smooth Interior)	3.47	3.64	0.1	0.764	0.064	4.800	12.23	12.23	12.24	12.23	2.14	0.31	4.62
MH 392	MH 393	5.25	4.20	0.015	36	211	0.50	Corrugated HDPE (Smooth Interior)	2.97	3.75	5.8	(N/A)	3.454	4.800	7.59	6.36	8.27	7.16	6.57	39.02	40.78
MH 393	MH 394	4.10	3.93	0.015	36	35	0.49	Corrugated HDPE (Smooth Interior)	3.85	4.47	5.8	(N/A)	3.454	4.800	6.36	6.10	7.09	6.89	6.49	39.02	40.28
DI 335	DI 337	16.65	16.00	0.015	24	43	1.51	Corrugated HDPE (Smooth Interior)	6.55	5.15	1.6	0.300	1.138	4.800	18.19	17.32	18.95	18.38	8.43	18.18	24.10
OS 362	MH 364	11.20	11.00	0.015	15	13	1.54	Corrugated HDPE (Smooth Interior)	5.55	5.63	0.0	(N/A)	0.000	4.800	12.71	12.67	12.81	12.77	2.53	3.11	6.94
DI 901	MH 902	45.80	45.50	0.015	15	30	1.00	Corrugated HDPE (Smooth Interior)	3.35	3.55	0.3	0.492	0.147	4.800	46.76	46.76	46.77	46.76	3.13	0.71	5.60
MH 902	DI 904	45.40	37.65	0.015	24	194	4.00	Corrugated HDPE (Smooth Interior)	2.90	2.26	5.8	0.498	2.936	4.800	46.76	38.48	47.37	40.52	11.47	14.20	39.20
DI 904	DI 906	37.50	28.00	0.015	24	233	4.08	Corrugated HDPE (Smooth Interior)	2.40	2.50	6.2	0.917	3.187	4.800	38.92	28.87	39.57	31.04	11.81	15.42	39.59
DI 906	DI 906A	27.59	19.70	0.015	24	212	3.72	Corrugated HDPE (Smooth Interior)	2.91	2.50	6.6	0.950	3.496	4.800	29.07	20.64	29.79	22.77	11.70	16.91	37.82
DI 906A	DI 18	16.10	16.05	0.015	24	38	0.13	Concrete	6.10	3.45	6.9	0.787	3.764	4.800	18.14	17.59	18.66	18.36	5.80	18.21	7.11
DI 903	DI 904	38.00	37.70	0.015	15	30	1.00	Corrugated HDPE (Smooth Interior)	2.65	2.95	0.2	0.594	0.126	4.800	38.92	38.92	38.92	38.92	2.99	0.61	5.60
DI 905	DI 906	28.00	27.69	0.015	15	46	0.67	Corrugated HDPE (Smooth Interior)	3.25	3.56	0.2	0.678	0.162	4.800	29.08	29.07	29.09	29.08	2.80	0.78	4.60
DI 20	DI 906A	16.30	16.20	0.015	24	30	0.33	Concrete	5.80	6.00	0.2	0.751	0.157	4.800	18.14	18.14	18.14	18.14	2.05	0.76	11.32
OS 463	MH 480	8.00	7.80	0.015	15	39	0.51	Corrugated HDPE (Smooth Interior)	3.25	2.65	0.0	(N/A)	0.000	4.800	8.77	8.47	8.96	8.74	3.53	2.81	4.01
OS 453	MH 454	8.00	7.79	0.015	24	14	1.50	Corrugated HDPE (Smooth Interior)	3.60	3.64	0.0	(N/A)	0.000	4.800	8.55	8.24	8.75	8.59	4.95	2.51	24.01
DI 451	MH 452	10.50	10.04	0.015	15	23	2.00	Corrugated HDPE (Smooth Interior)	2.95	3.47	0.2	0.842	0.202	4.800	10.89	10.34	11.03	10.64	4.38	0.98	7.92

Glen Isle Redevelopment
Active Scenario: Base
Conduit FlexTable: Combined Pipe/Node Report

Start Node	Stop Node	Invert (Upstream) (ft)	Invert (Downstream) (ft)	Manning's n	Diameter (in)	Length (Unified) (ft)	Slope (%)	Material	Cover (Start) (ft)	Cover (Stop) (ft)	System Drainage Area (acres)	Upstream Inlet C	System CA (acres)	System Intensity (in/h)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Velocity (ft/s)	Flow (ft³/s)	Capacity (Design) (ft³/s)
MH 452	MH 454	8.65	8.00	0.015	24	54	1.20	Corrugated HDPE (Smooth Interior)	4.11	3.43	0.2	(N/A)	0.202	4.800	9.71	8.89	10.13	9.55	6.51	8.81	21.51
DI 447	OF-441	10.35	9.50	0.015	15	68	1.25	Concrete	2.70	4.25	0.2	0.852	0.130	4.800	10.66	9.77	10.77	9.93	3.27	0.63	6.26
DI 902A	MH 902	45.95	45.87	0.015	15	8	1.00	Corrugated HDPE (Smooth Interior)	3.20	3.18	0.1	0.815	0.106	4.800	46.76	46.76	46.76	46.76	2.84	0.51	5.60
DI 336	DI 337	19.50	19.28	0.015	15	43	0.51	Corrugated HDPE (Smooth Interior)	2.75	2.62	0.2	0.441	0.095	4.800	19.79	19.54	19.86	19.64	2.17	0.46	4.00
DI 328	DI 329	35.20	30.50	0.015	15	138	3.41	Corrugated HDPE (Smooth Interior)	3.85	2.75	1.3	0.789	1.049	4.800	36.11	31.12	36.55	32.21	8.39	5.08	10.33
DI 329	DI 330	29.72	27.80	0.015	15	80	2.40	Corrugated HDPE (Smooth Interior)	3.53	2.75	1.4	0.300	1.067	4.800	30.64	28.49	31.08	29.34	7.37	5.16	8.67
DI 330	DI 335	19.01	17.00	0.015	15	160	1.26	Corrugated HDPE (Smooth Interior)	11.54	6.95	1.4	0.300	1.081	4.800	19.94	18.19	20.38	18.48	5.72	5.23	6.27
RD 331	OF-331A	22.80	21.44	0.015	15	91	1.49	Corrugated HDPE (Smooth Interior)	5.95	7.31	1.8	0.765	1.362	4.800	23.83	22.43	24.41	23.05	6.35	6.59	6.84
RD 332	OF 332A	21.81	21.50	0.015	15	16	1.94	Corrugated HDPE (Smooth Interior)	6.94	7.25	1.6	0.762	1.257	4.800	22.81	22.36	23.33	23.07	7.02	6.08	7.79
DI 313	OF-315	11.46	10.89	0.015	15	19	3.00	Corrugated HDPE (Smooth Interior)	3.74	3.16	0.9	0.870	0.750	4.800	12.23	11.45	12.56	12.18	7.33	3.63	9.70
MH 364	MH 368	10.75	8.00	0.015	30	146	1.88	Corrugated HDPE (Smooth Interior)	4.63	3.56	5.4	(N/A)	3.290	4.800	12.67	9.47	13.62	11.21	10.58	31.70	48.78
DI 368A	DI 368B	10.40	9.80	0.015	15	66	0.91	Corrugated HDPE (Smooth Interior)	2.15	2.37	0.1	0.300	0.027	4.800	10.54	10.05	10.59	10.06	1.83	0.13	5.34
DI 365B	DI 365B direct	7.29	6.75	0.015	15	22	2.45	Corrugated HDPE (Smooth Interior)	5.79	5.50	0.2	0.419	0.092	4.800	7.55	6.94	7.64	7.16	3.74	0.44	8.77
RD 441	OF-441A	13.00	11.50	0.015	18	100	1.50	Corrugated HDPE (Smooth Interior)	7.50	3.70	2.0	0.797	1.618	4.800	14.08	12.43	14.59	13.15	6.83	7.83	11.15
MH 454	MH 480	6.63	6.20	0.015	24	86	0.50	Corrugated HDPE (Smooth Interior)	4.80	3.50	0.2	(N/A)	0.202	4.800	8.00	7.41	8.38	7.91	4.92	11.32	13.86
SP 521	MH 522	8.70	8.58	0.013	15	24	0.50	Corrugated HDPE (Smooth Interior)	1.80	4.12	0.4	0.400	0.164	4.800	9.05	8.93	9.17	9.05	2.79	0.79	4.57
MH 522	MH 523	8.49	8.39	0.013	15	20	0.50	Corrugated HDPE (Smooth Interior)	4.21	4.11	0.4	(N/A)	0.164	4.800	8.84	8.74	8.96	8.86	2.79	0.79	4.57
MH 523	MH 524	8.29	7.73	0.013	15	111	0.50	Corrugated HDPE (Smooth Interior)	4.21	4.11	0.4	(N/A)	0.164	4.800	8.64	8.08	8.76	8.20	2.80	0.79	4.59
MH 524	SP 501C	7.63	7.30	0.015	15	66	0.50	Corrugated HDPE (Smooth Interior)	4.21	1.15	0.4	(N/A)	0.164	4.800	8.01	7.65	8.11	7.77	2.52	0.79	3.96
RD 361	OF 361A	15.38	11.90	0.015	15	100	3.48	Corrugated HDPE (Smooth Interior)	2.17	5.35	0.8	0.804	0.643	4.800	16.09	12.37	16.38	13.22	7.43	3.11	10.44
OS 333	DI 335	18.00	17.76	0.015	24	16	1.50	Corrugated HDPE (Smooth Interior)	5.00	5.44	0.0	(N/A)	0.000	4.800	19.28	18.85	19.83	19.66	7.75	12.67	24.01
DI 448	DI 449	8.90	8.57	0.015	15	66	0.50	Corrugated HDPE (Smooth Interior)	2.35	3.38	0.2	0.852	0.130	4.800	9.24	8.88	9.32	8.99	2.36	0.63	3.96
DI 449	OF-449A	8.47	8.33	0.015	15	27	0.52	Corrugated HDPE (Smooth Interior)	3.48	4.48	0.2	0.950	0.195	4.800	8.88	8.71	8.99	8.85	2.68	0.94	4.03
DI 445	OF-445A	9.65	9.50	0.015	15	15	1.00	Corrugated HDPE (Smooth Interior)	4.70	4.55	0.1	0.950	0.069	4.800	9.87	9.71	9.95	9.81	2.51	0.34	5.60
DI 446	OF-446A	9.64	9.50	0.015	15	14	1.00	Corrugated HDPE (Smooth Interior)	4.91	4.58	0.1	0.950	0.060	4.800	9.85	9.69	9.92	9.78	2.40	0.29	5.60

Glen Isle Redevelopment
Active Scenario: Base
Conduit FlexTable: Combined Pipe/Node Report

Start Node	Stop Node	Invert (Upstream) (ft)	Invert (Downstream) (ft)	Manning's n	Diameter (in)	Length (Unified) (ft)	Slope (%)	Material	Cover (Start) (ft)	Cover (Stop) (ft)	System Drainage Area (acres)	Upstream Inlet C	System CA (acres)	System Intensity (in/h)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Velocity (ft/s)	Flow (ft³/s)	Capacity (Design) (ft³/s)
OS 443	MH 444	11.50	11.18	0.015	18	32	1.00	Corrugated HDPE (Smooth Interior)	3.10	3.22	0.0	(N/A)	0.000	4.800	12.58	12.25	13.09	12.77	5.79	7.83	9.10
MH 444	MH 452	9.94	9.50	0.015	24	44	1.00	Corrugated HDPE (Smooth Interior)	3.96	3.26	0.0	(N/A)	0.000	4.800	10.94	10.38	11.33	10.92	5.89	7.83	19.61
YD 375A	YD 375B	8.00	7.50	0.015	12	100	0.50	Corrugated HDPE (Smooth Interior)	1.50	2.00	0.3	0.633	0.173	4.800	8.43	8.15	8.53	8.18	2.60	0.84	2.18
YD 375B	YD 375C	7.50	7.20	0.015	12	61	0.49	Corrugated HDPE (Smooth Interior)	2.00	2.30	0.5	0.871	0.331	4.800	8.15	7.89	8.28	8.01	3.02	1.60	2.17
YD 375C	YD 375D	7.20	6.70	0.015	15	99	0.51	Corrugated HDPE (Smooth Interior)	2.05	2.55	0.7	0.708	0.489	4.800	7.89	7.59	8.07	7.69	3.38	2.37	3.98
YD 375D	OF 375E	6.70	6.56	0.015	15	26	0.54	Corrugated HDPE (Smooth Interior)	2.55	2.69	1.1	0.682	0.756	4.800	7.59	7.33	7.83	7.66	3.78	3.66	4.11
YD 371	YD 372	8.94	8.45	0.015	12	98	0.50	Corrugated HDPE (Smooth Interior)	2.36	2.85	0.1	0.628	0.063	4.800	9.19	8.71	9.25	8.76	1.96	0.31	2.18
YD 373	OF-373A	7.22	7.00	0.015	12	22	1.00	Corrugated HDPE (Smooth Interior)	4.08	4.00	0.4	0.625	0.249	4.800	7.68	7.43	7.86	7.64	3.69	1.20	3.09
YD 374	OF 374A	7.43	7.12	0.015	12	31	1.00	Corrugated HDPE (Smooth Interior)	2.77	3.88	0.1	0.628	0.075	4.800	7.68	7.35	7.77	7.46	2.63	0.36	3.09
OF 391	MH 392	6.00	5.67	0.015	30	33	1.00	Corrugated HDPE (Smooth Interior)	2.50	3.05	0.0	(N/A)	0.000	4.800	7.59	7.59	7.65	7.63	5.52	6.53	35.55
DI 450	OF-450A	9.50	9.40	0.015	15	21	0.48	Corrugated HDPE (Smooth Interior)	2.45	2.95	0.1	0.950	0.065	4.800	9.74	9.62	9.80	9.69	1.89	0.31	3.86
MH 368	MH 368C	6.38	6.10	0.015	30	28	1.00	Concrete	5.18	4.85	5.4	(N/A)	3.290	4.800	8.30	7.94	9.25	8.98	8.19	31.70	35.55
MH 368C	MH 392	6.00	5.35	0.015	30	65	1.00	Concrete	4.95	3.37	5.8	(N/A)	3.454	4.800	7.94	7.59	8.92	8.35	8.21	32.49	35.55
DI 368B	MH 368C	9.70	9.53	0.015	15	17	1.00	Corrugated HDPE (Smooth Interior)	2.47	2.67	0.4	0.393	0.164	4.800	10.05	9.85	10.17	10.01	3.23	0.80	5.60
YD 372	YD 373	8.35	7.32	0.015	12	103	1.00	Corrugated HDPE (Smooth Interior)	2.95	3.98	0.3	0.541	0.151	4.800	8.71	7.68	8.84	7.81	3.22	0.73	3.09
DI 365A	OF-365B	8.58	7.00	0.015	15	79	2.00	Corrugated HDPE (Smooth Interior)	6.92	6.75	0.2	0.484	0.111	4.800	8.87	7.22	8.97	7.43	3.68	0.54	7.92
DI 461A	DI 461B	8.90	8.63	0.015	12	54	0.50	Corrugated HDPE (Smooth Interior)	2.00	2.27	0.2	0.806	0.181	4.800	9.34	9.05	9.45	9.17	2.63	0.88	2.18
DI 461B	OF 461C	8.53	8.50	0.015	12	6	0.50	Corrugated HDPE (Smooth Interior)	2.37	2.50	0.3	0.843	0.258	4.800	9.05	8.97	9.19	9.15	2.87	1.25	2.18
DI 462A	OF 462B	8.53	8.50	0.015	12	6	0.50	Corrugated HDPE (Smooth Interior)	2.07	2.50	0.4	0.847	0.322	4.800	9.12	9.03	9.28	9.24	3.02	1.56	2.18
MH 480	DI 481B	6.00	5.26	0.015	24	74	1.00	Corrugated HDPE (Smooth Interior)	3.70	5.14	0.2	(N/A)	0.202	4.800	7.35	6.52	7.96	7.23	6.79	14.13	19.61
DI 481B	OF 482	5.16	5.00	0.015	24	19	0.84	Corrugated HDPE (Smooth Interior)	5.24	3.00	0.5	0.893	0.407	4.800	6.56	6.40	7.20	7.04	6.42	15.12	17.99
YD 481A	DI 481B	10.19	10.00	0.015	12	38	0.50	Corrugated HDPE (Smooth Interior)	1.31	1.40	0.1	0.893	0.103	4.800	10.51	10.29	10.59	10.40	2.25	0.50	2.18
YD 506A	YD 506B	9.00	8.44	0.015	15	113	0.50	Corrugated HDPE (Smooth Interior)	1.05	1.31	0.3	0.754	0.249	4.800	9.47	9.00	9.60	9.08	2.82	1.21	3.94
YD 506B	SP 501A	8.44	8.23	0.015	15	43	0.49	Corrugated HDPE (Smooth Interior)	1.31	1.22	0.4	0.895	0.334	4.800	9.00	8.73	9.14	8.92	3.03	1.61	3.91

Glen Isle Redevelopment
Active Scenario: Base
FlexTable: Catch Basin Table

Label	Elevation (Rim) (ft)	Elevation (Invert Out) (ft)	Inlet Drainage Area (acres)	Inlet C	System CA (acres)	System Intensity (in/h)	Intercepted Rational Flow (ft^3/s)	Intercepted Tc (min)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Total Out) (ft^3/s)
DI 308	39.80	31.69	0.177	0.913	0.421	4.800	0.78	5.000	32.26	32.26	2.04
DI 310	33.80	25.38	0.043	0.905	0.508	4.800	0.19	5.000	26.01	26.01	2.46
DI 312	24.60	16.50	0.065	0.900	0.636	4.800	0.28	5.000	17.21	17.21	3.08
DI 313	16.45	11.46	0.057	0.870	0.750	4.800	0.24	5.000	12.23	12.23	3.63
DI 314	16.45	11.73	0.084	0.764	0.064	4.800	0.31	5.000	12.23	12.23	0.31
DI 337	23.15	15.90	0.041	0.300	1.246	4.800	0.06	5.000	17.46	17.46	18.70
MH 360	20.00	13.50	(N/A)	(N/A)	3.290	4.800	0.00	5.000	15.34	15.34	28.59
MH 394	11.40	3.83	(N/A)	(N/A)	3.454	4.800	0.00	5.000	6.10	6.10	39.02
DI 307	40.10	31.96	0.345	0.752	0.259	4.800	1.26	5.000	32.44	32.44	1.26
DI 309	33.70	29.70	0.072	0.661	0.048	4.800	0.23	5.000	29.89	29.89	0.23
DI 356	21.80	15.83	3.520	0.581	2.044	4.800	9.89	5.000	16.96	16.96	9.89
MH 364	17.88	10.75	(N/A)	(N/A)	3.290	4.800	0.00	5.000	12.67	12.67	31.70
DI 336	23.50	19.50	0.216	0.441	0.095	4.800	0.46	5.000	19.79	19.79	0.46
DI 311	24.60	20.60	0.103	0.679	0.070	4.800	0.34	5.000	20.83	20.83	0.34
MH 392	11.22	5.25	(N/A)	(N/A)	3.454	4.800	0.00	5.000	7.59	7.59	39.02
MH 393	10.95	4.10	(N/A)	(N/A)	3.454	4.800	0.00	5.000	6.36	6.36	39.02
DI 335	25.20	16.65	0.192	0.300	1.138	4.800	0.28	5.000	18.19	18.19	18.18
OS 362	18.00	11.20	(N/A)	(N/A)	0.000	4.800	0.00	5.000	12.71	12.71	3.11
DI 901	50.40	45.80	0.298	0.492	0.147	4.800	0.71	5.000	46.76	46.76	0.71
MH 902	50.30	45.40	5.390	0.498	2.936	4.800	12.98	5.000	46.76	46.76	14.20
DI 904	41.90	37.50	0.137	0.917	3.187	4.800	0.61	5.000	38.92	38.92	15.42
DI 906	32.50	27.59	0.154	0.950	3.496	4.800	0.71	5.000	29.07	29.07	16.91
DI 906A	24.20	16.10	0.142	0.787	3.764	4.800	0.54	5.000	18.14	18.14	18.21
DI 903	41.90	38.00	0.212	0.594	0.126	4.800	0.61	5.000	38.92	38.92	0.61
DI 905	32.50	28.00	0.239	0.678	0.162	4.800	0.78	5.000	29.08	29.08	0.78
DI 20	24.10	16.30	0.209	0.751	0.157	4.800	0.76	5.000	18.14	18.14	0.76
OS 463	12.50	8.00	(N/A)	(N/A)	0.000	4.800	0.00	5.000	8.77	8.77	2.81
MH 480	11.70	6.00	(N/A)	(N/A)	0.202	4.800	0.00	5.000	7.35	7.35	14.13
OS 453	13.60	8.00	(N/A)	(N/A)	0.000	4.800	0.00	5.000	8.55	8.55	2.51
MH 454	13.43	6.63	(N/A)	(N/A)	0.202	4.800	0.00	5.000	8.00	8.00	11.32
DI 451	14.70	10.50	0.240	0.842	0.202	4.800	0.98	5.000	10.89	10.89	0.98
MH 452	14.76	8.65	(N/A)	(N/A)	0.202	4.800	0.00	5.000	9.71	9.71	8.81
DI 447	14.30	10.35	0.153	0.852	0.130	4.800	0.63	5.000	10.66	10.66	0.63
DI 902A	50.40	45.95	0.130	0.815	0.106	4.800	0.51	5.000	46.76	46.76	0.51
DI 328	40.30	35.20	1.330	0.789	1.049	4.800	5.08	5.000	36.11	36.11	5.08
DI 329	34.50	29.72	0.061	0.300	1.067	4.800	0.09	5.000	30.64	30.64	5.16
DI 330	31.80	19.01	0.045	0.300	1.081	4.800	0.07	5.000	19.94	19.94	5.23
RD 331	30.00	22.80	1.780	0.765	1.362	4.800	6.59	5.000	23.83	23.83	6.59
RD 332	30.00	21.81	1.650	0.762	1.257	4.800	6.08	5.000	22.81	22.81	6.08
MH 368	14.06	6.38	(N/A)	(N/A)	3.290	4.800	0.00	5.000	8.30	8.30	31.70
DI 368A	13.80	10.40	0.090	0.300	0.027	4.800	0.13	5.000	10.54	10.54	0.13
DI 368B	13.42	9.70	0.350	0.393	0.164	4.800	0.67	5.000	10.05	10.05	0.80
DI 365A	16.75	8.58	0.230	0.484	0.111	4.800	0.54	5.000	8.87	8.87	0.54

Glen Isle Redevelopment
Active Scenario: Base
FlexTable: Catch Basin Table

Label	Elevation (Rim) (ft)	Elevation (Invert Out) (ft)	Inlet Drainage Area (acres)	Inlet C	System CA (acres)	System Intensity (in/h)	Intercepted Rational Flow (ft^3/s)	Intercepted Tc (min)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Flow (Total Out) (ft^3/s)
DI 365B	14.33	7.29	0.219	0.419	0.092	4.800	0.44	5.000	7.55	7.55	0.44
RD 441	22.00	13.00	2.030	0.797	1.618	4.800	7.83	5.000	14.08	14.08	7.83
SP 521	11.75	8.70	0.410	0.400	0.164	4.800	0.79	5.000	9.05	9.05	0.79
MH 522	13.95	8.49	(N/A)	(N/A)	0.164	4.800	0.00	5.000	8.84	8.84	0.79
MH 523	13.75	8.29	(N/A)	(N/A)	0.164	4.800	0.00	5.000	8.64	8.64	0.79
MH 524	13.09	7.63	(N/A)	(N/A)	0.164	4.800	0.00	5.000	8.01	8.01	0.79
RD 361	18.80	15.38	0.800	0.804	0.643	4.800	3.11	5.000	16.09	16.09	3.11
OS 333	25.00	18.00	(N/A)	(N/A)	0.000	4.800	0.00	5.000	19.28	19.28	12.67
DI 448	12.50	8.90	0.153	0.852	0.130	4.800	0.63	5.000	9.24	9.24	0.63
DI 449	13.20	8.47	0.068	0.950	0.195	4.800	0.31	5.000	8.88	8.88	0.94
DI 445	15.60	9.65	0.073	0.950	0.069	4.800	0.34	5.000	9.87	9.87	0.34
DI 446	15.80	9.64	0.063	0.950	0.060	4.800	0.29	5.000	9.85	9.85	0.29
OS 443	16.10	11.50	(N/A)	(N/A)	0.000	4.800	0.00	5.000	12.58	12.58	7.83
MH 444	15.90	9.94	(N/A)	(N/A)	0.000	4.800	0.00	5.000	10.94	10.94	7.83
YD 375A	10.50	8.00	0.273	0.633	0.173	4.800	0.84	5.000	8.43	8.43	0.84
YD 375B	10.50	7.50	0.182	0.871	0.331	4.800	0.77	5.000	8.15	8.15	1.60
YD 375C	10.50	7.20	0.223	0.708	0.489	4.800	0.76	5.000	7.89	7.89	2.37
YD 375D	10.50	6.70	0.391	0.682	0.756	4.800	1.29	5.000	7.59	7.59	3.66
YD 371	12.30	8.94	0.101	0.628	0.063	4.800	0.31	5.000	9.19	9.19	0.31
YD 372	12.30	8.35	0.162	0.541	0.151	4.800	0.42	5.000	8.71	8.71	0.73
YD 373	12.30	7.22	0.156	0.625	0.249	4.800	0.47	5.000	7.68	7.68	1.20
YD 374	11.20	7.43	0.119	0.628	0.075	4.800	0.36	5.000	7.68	7.68	0.36
OF 391	11.00	6.00	(N/A)	(N/A)	0.000	4.800	0.00	5.000	7.59	7.59	6.53
DI 450	13.20	9.50	0.068	0.950	0.065	4.800	0.31	5.000	9.74	9.74	0.31
MH 368C	13.45	6.00	(N/A)	(N/A)	3.454	4.800	0.00	5.000	7.94	7.94	32.49
DI 461A	11.90	8.90	0.225	0.806	0.181	4.800	0.88	5.000	9.34	9.34	0.88
DI 461B	11.90	8.53	0.091	0.843	0.258	4.800	0.37	5.000	9.05	9.05	1.25
DI 462A	11.60	8.53	0.380	0.847	0.322	4.800	1.56	5.000	9.12	9.12	1.56
YD 481A	12.50	10.19	0.115	0.893	0.103	4.800	0.50	5.000	10.51	10.51	0.50
DI 481B	12.40	5.16	0.115	0.893	0.407	4.800	0.50	5.000	6.56	6.56	15.12
YD 506A	11.30	9.00	0.331	0.754	0.249	4.800	1.21	5.000	9.47	9.47	1.21
YD 506B	11.00	8.44	0.094	0.895	0.334	4.800	0.41	5.000	9.00	9.00	1.61

Glen Isle Redevelopment
Active Scenario: Base
FlexTable: Catchment Table

Outflow Node	Area (acres)	Rational C	Catchment CA (acres)	Time of Concentration (min)	Catchment Intensity (in/h)	Catchment Rational Flow (ft^3/s)
DI 901	0.298	0.492	0.147	5.000	4.800	0.71
DI 902A	0.130	0.815	0.106	5.000	4.800	0.51
DI 903	0.212	0.594	0.126	5.000	4.800	0.61
DI 904	0.137	0.917	0.126	5.000	4.800	0.61
DI 905	0.239	0.678	0.162	5.000	4.800	0.78
DI 906	0.154	0.950	0.146	5.000	4.800	0.71
DI 336	0.216	0.441	0.095	5.000	4.800	0.46
DI 20	0.209	0.751	0.157	5.000	4.800	0.76
DI 906A	0.142	0.787	0.112	5.000	4.800	0.54
DI 307	0.345	0.752	0.259	5.000	4.800	1.26
DI 308	0.177	0.913	0.162	5.000	4.800	0.78
DI 309	0.072	0.661	0.048	5.000	4.800	0.23
DI 310	0.043	0.905	0.039	5.000	4.800	0.19
DI 311	0.103	0.679	0.070	5.000	4.800	0.34
DI 312	0.065	0.900	0.058	5.000	4.800	0.28
DI 313	0.057	0.870	0.050	5.000	4.800	0.24
DI 314	0.084	0.764	0.064	5.000	4.800	0.31
DI 356	3.520	0.581	2.044	5.000	4.800	9.89
DI 451	0.240	0.842	0.202	5.000	4.800	0.98
DI 447	0.153	0.852	0.130	5.000	4.800	0.63
DI 445	0.073	0.950	0.069	5.000	4.800	0.34
RD 331	1.780	0.765	1.362	5.000	4.800	6.59
DI 446	0.063	0.950	0.060	5.000	4.800	0.29
RD 441	2.030	0.797	1.618	5.000	4.800	7.83
YD 371	0.101	0.628	0.063	5.000	4.800	0.31
YD 372	0.162	0.541	0.088	5.000	4.800	0.42
YD 373	0.156	0.625	0.097	5.000	4.800	0.47
YD 374	0.119	0.628	0.075	5.000	4.800	0.36
YD 375D	0.391	0.682	0.267	5.000	4.800	1.29
YD 375C	0.223	0.708	0.158	5.000	4.800	0.76
YD 375B	0.182	0.871	0.159	5.000	4.800	0.77
YD 375A	0.273	0.633	0.173	5.000	4.800	0.84
DI 368A	0.090	0.300	0.027	5.000	4.800	0.13
DI 368B	0.350	0.393	0.138	5.000	4.800	0.67
DI 365B	0.219	0.419	0.092	5.000	4.800	0.44
DI 365A	0.230	0.484	0.111	5.000	4.800	0.54
SP 521	0.410	0.400	0.164	5.000	4.800	0.79
RD 361	0.800	0.804	0.643	5.000	4.800	3.11
DI 328	1.330	0.789	1.049	5.000	4.800	5.08
DI 329	0.061	0.300	0.018	5.000	4.800	0.09
DI 330	0.045	0.300	0.014	5.000	4.800	0.07
RD 332	1.650	0.762	1.257	5.000	4.800	6.08
DI 335	0.192	0.300	0.058	5.000	4.800	0.28
DI 448	0.153	0.852	0.130	5.000	4.800	0.63
DI 449	0.068	0.950	0.065	5.000	4.800	0.31
DI 337	0.041	0.300	0.012	5.000	4.800	0.06
DI 450	0.068	0.950	0.065	5.000	4.800	0.31

Glen Isle Redevelopment
Active Scenario: Base
FlexTable: Catchment Table

Outflow Node	Area (acres)	Rational C	Catchment CA (acres)	Time of Concentration (min)	Catchment Intensity (in/h)	Catchment Rational Flow (ft^3/s)
MH 902	5.390	0.498	2.683	5.000	4.800	12.98
DI 461A	0.225	0.806	0.181	5.000	4.800	0.88
DI 461B	0.091	0.843	0.077	5.000	4.800	0.37
DI 462A	0.380	0.847	0.322	5.000	4.800	1.56
YD 481A	0.115	0.893	0.103	5.000	4.800	0.50
DI 481B	0.115	0.893	0.103	5.000	4.800	0.50
YD 506A	0.331	0.754	0.249	5.000	4.800	1.21
YD 506B	0.094	0.895	0.084	5.000	4.800	0.41

Glen Isle Redevelopment
Active Scenario: Base
FlexTable: Outfall Table

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	System CA (acres)	System Intensity (in/h)	Hydraulic Grade (ft)	Flow (Total Out) (ft^3/s)
OF 395	10.50	3.50	3.454	4.800	5.53	39.02
OF 482	10.00	5.00	0.407	4.800	6.40	15.12
OF-441	15.00	9.50	0.130	4.800	9.77	0.63
OF-315	15.30	10.89	0.750	4.800	11.45	3.63
OF-331A	30.00	21.44	1.362	4.800	22.43	6.59
OF 332A	30.00	21.50	1.257	4.800	22.36	6.08
DI 365B direct	13.50	6.75	0.092	4.800	6.94	0.44
OF-441A	16.70	11.50	1.618	4.800	12.43	7.83
SP 501C	9.70	7.30	0.164	4.800	7.65	0.79
DI 18	21.50	16.00	3.764	4.800	17.59	18.21
OF 361A	18.50	11.90	0.643	4.800	12.37	3.11
OF-449A	14.06	8.33	0.195	4.800	8.71	0.94
OF-445A	15.30	9.50	0.069	4.800	9.71	0.34
OF-446A	15.33	9.50	0.060	4.800	9.69	0.29
OF 375E	10.50	6.56	0.756	4.800	7.33	3.66
OF-373A	12.00	7.00	0.249	4.800	7.43	1.20
OF 374A	12.00	7.12	0.075	4.800	7.35	0.36
OF-450A	13.60	9.40	0.065	4.800	9.62	0.31
OF-365B	15.00	7.00	0.111	4.800	7.22	0.54
OF 461C	12.00	8.50	0.258	4.800	8.97	1.25
OF 462B	12.00	8.50	0.322	4.800	9.03	1.56
SP 501A	10.70	7.30	0.334	4.800	8.73	1.61

Appendix E
Construction Phase – Inspection Logs

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass
water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.